

What is claimed is:

- 1    1.    A wireless apparatus comprising:
  - 2                an adaptive channelization controller to determine which of a plurality of predetermined sub-channels to use to support a multicarrier wireless link, based on channel state information; and
  - 5                a receiver chain to process a received multicarrier signal associated with said multicarrier wireless link based on control information output by said adaptive channelization controller.
  
- 1    2.    The wireless apparatus of claim 1, further comprising:
  - 2                a transmitter chain to generate a multicarrier transmit signal for said multicarrier wireless link based on control information output by said adaptive channelization controller.
  
- 1    3.    The wireless apparatus of claim 1, wherein:
  - 2                said receiver chain includes a frequency demultiplexer to separate said received multicarrier signal into multiple portions based on frequency, said multiple portions corresponding to said plurality of predetermined sub-channels.
  
- 1    4.    The wireless apparatus of claim 3, wherein:
  - 2                said received multicarrier signal is an orthogonal frequency division multiplexing (OFDM) signal; and
  - 4                said receiver chain further includes a plurality of Fourier transform units to separately process said multiple signal portions output by said frequency demultiplexer.
  
- 1    5.    The wireless apparatus of claim 4, wherein:
  - 2                said receiver chain further includes a guard interval removal unit between said frequency demultiplexer and said plurality of Fourier transform units to remove guard intervals from said multiple signal portions output by said frequency demultiplexer.

1       6.     The wireless apparatus of claim 4, wherein:  
2              said plurality of Fourier transform units includes at least one fast Fourier  
3              transform unit.

1       7.     The wireless apparatus of claim 4, wherein:  
2              said receiver chain further includes an adaptive parallel to serial converter to  
3              receive output streams from said plurality of Fourier transform units and to merge said  
4              output streams into a serial stream based on control information from said adaptive  
5              channelization controller.

1       8.     The wireless apparatus of claim 7, wherein:  
2              said adaptive parallel to serial converter ignores output streams that are  
3              associated with sub-channels that are not currently used in support of said multicarrier  
4              wireless link.

1       9.     The wireless apparatus of claim 7, wherein:  
2              said receiver chain further includes an adaptive demapper to demap data within  
3              said serial stream output by said adaptive parallel to serial converter based on control  
4              information from said adaptive channelization controller.

1       10.    The wireless apparatus of claim 2, wherein:  
2              said transmitter chain comprises a forward error correction (FEC) encoder to  
3              encode source data and an adaptive mapper to map the encoded data based on a  
4              predetermined modulation constellation.

1       11.    The wireless apparatus of claim 10, wherein:  
2              said transmitter chain further comprises an adaptive serial to parallel converter  
3              to convert a serial stream output by said adaptive mapper to a parallel format based on  
4              control information from said adaptive channelization controller.

1       12.     The wireless apparatus of claim 11, wherein:  
2                 said adaptive serial to parallel converter adds zeros to a parallel output stream in  
3     data positions corresponding to sub-channels that are not currently being used to  
4     support said multicarrier wireless link.

1       13.     The wireless apparatus of claim 11, wherein:  
2                 said multicarrier transmit signal is an orthogonal frequency division  
3     multiplexing (OFDM) signal; and  
4                 said transmitter chain further includes an inverse Fourier transform unit to  
5     convert a parallel output signal of said adaptive serial to parallel converter from a  
6     frequency domain representation to a time domain representation.

1       14.     The wireless apparatus of claim 13, wherein:  
2                 said transmitter chain further includes a guard interval addition unit to add a  
3     guard interval to said time domain representation output by said inverse Fourier  
4     transform unit.

1       15.     The wireless apparatus of claim 2, wherein:  
2                 said adaptive channelization controller, said receiver chain, and said transmitter  
3     chain are all implemented on the same semiconductor chip.

1       16.     The wireless apparatus of claim 1, wherein:  
2                 said channel state information includes information received from a remote  
3     location.

1       17.     The wireless apparatus of claim 1, wherein:  
2                 said channel state information includes information that was measured within  
3     said wireless apparatus.

1       18.     A wireless apparatus comprising:  
2              a frequency demultiplexer to separate a received multicarrier signal into  
3              multiple portions based on frequency, said multiple portions corresponding to a  
4              plurality of predetermined frequency sub-channels and including at least a first portion  
5              and a second portion;  
6              a first Fourier transform unit to convert said first portion of said multicarrier  
7              signal from a time domain representation to a frequency domain representation; and  
8              a second Fourier transform unit to convert said second portion of said  
9              multicarrier signal from a time domain representation to a frequency domain  
10             representation, separately from said first portion of said multicarrier signal.

1       19.     The wireless apparatus of claim 18, wherein:  
2              said second Fourier transform unit is a different unit from said first Fourier  
3              transform unit.

1       20.     The wireless apparatus of claim 18, wherein:  
2              said first and second Fourier transform units are the same unit, wherein said unit  
3              processes said first and second portions of said multicarrier signal at different times.

1       21.     The wireless apparatus of claim 18, further comprising:  
2              a guard interval removal unit between said frequency demultiplexer and said  
3              first Fourier transform unit to remove a guard interval from said first signal portion  
4              before said first signal portion reaches said first Fourier transform unit.

1       22.     The wireless apparatus of claim 18, further comprising:  
2              an adaptive channelization controller to determine which of said plurality of  
3              predetermined frequency sub-channels to use to support a multicarrier wireless link,  
4              based on channel state information.

1       23.     The wireless apparatus of claim 18, wherein:  
2                 said received multicarrier signal is an orthogonal frequency division  
3         multiplexing (OFDM) multicarrier signal.

1       24.     The wireless apparatus of claim 18, further comprising:  
2                 at least one other Fourier transform unit to convert at least one other portion of  
3         said multicarrier signal from a time domain representation to a frequency domain  
4         representation.

1       25.     The wireless apparatus of claim 18, wherein:  
2                 said frequency demultiplexer includes an analog filter.

1       26.     A method comprising:  
2                 acquiring channel state information associated with a channel having a plurality  
3         of sub-channels;  
4                 determining which sub-channels within said plurality of sub-channels to use for  
5         a wireless link based on said channel state information; and  
6                 delivering sub-channel adaptation information to a receiver chain for use in  
7         processing a multicarrier receive signal associated with said wireless link.

1       27.     The method of claim 26, wherein:  
2                 said channel state information includes information received from a remote  
3         location.

1       28.     The method of claim 26, wherein:  
2                 said channel state information includes information that was measured within a  
3         local receiver.

1        29.     The method of claim 26, wherein:  
2                determining which sub-channels within said plurality of sub-channels to use for  
3        said wireless link includes identifying sub-channels that are not currently being used by  
4        other links.

1        30.     The method of claim 26, further comprising:  
2                delivering sub-channel adaptation information to a transmitter chain for use in  
3        generating a multicarrier transmit signal for said wireless link.

1        31.     A method comprising:  
2                dividing a received multicarrier signal into a plurality of frequency sub-channel  
3        components; and  
4                individually transforming each of said plurality of frequency sub-channel  
5        components from a time domain representation to a frequency domain representation.

1        32.     The method of claim 31, further comprising:  
2                converting said frequency domain representations resulting from individually  
3        transforming said plurality of frequency sub-channel components to a single serial  
4        stream based on control information received from an adaptive channelization  
5        controller.

1        33.     The method of claim 31, wherein:  
2                individually transforming includes applying each of said plurality of frequency  
3        sub-channel components to a separate Fourier transform unit.

1        34.     A system comprising:  
2                an adaptive channelization controller to determine which of a plurality of  
3        predetermined sub-channels to use to support a multicarrier wireless link, based on  
4        channel state information;

5           at least one dipole antenna to receive a multicarrier signal associated with said  
6 wireless link; and

7           a receiver chain to process said received multicarrier signal based on control  
8 information output by said adaptive channelization controller.

1 35. The system of claim 34, wherein:

2           said adaptive channelization controller determines which of said plurality of  
3 predetermined sub-channels to use to support said multicarrier wireless link by  
4 identifying sub-channels that are currently being utilized by other wireless links.

1 36. The system of claim 34, wherein:

2           said at least one dipole antenna includes multiple dipole antennas.

1 37. An article comprising a storage medium having instructions stored thereon that,  
2 when executed by a computing platform, result in:

3           acquiring channel state information associated with a channel having a plurality  
4 of sub-channels;

5           determining which sub-channels within said plurality of sub-channels to use for  
6 a wireless link based on said channel state information; and

7           delivering sub-channel adaptation information to a receiver chain for use in  
8 processing a multicarrier receive signal associated with said wireless link.

1 38. The article of claim 37, wherein:

2           determining which sub-channels within said plurality of sub-channels to use for  
3 said wireless link includes identifying sub-channels that are not currently being used by  
4 other wireless links.

1 39. The article of claim 37, wherein said storage medium further includes  
2 instructions that, when executed by said computing platform, result in:

- 3           delivering sub-channel adaptation information to a transmitter chain for use in
- 4   generating a multicarrier transmit signal for said wireless link.